INDIA WEATHER REVIEW, 1936.

ANNUAL SUMMARY.

PART B.

SNOWFALL.

This part contains a summary of the reports of snowfall in the mountain regions to the north and northwest of India. These reports are collected by local officers from the local residents, headmen of villages, or from travellers who have passed through the region and are then transmitted to this office.

The amount of snowfall is usually measured by finding the depth of undisturbed snow lying on the ground and such measurements are given in feet and inches. At places provided with raingauges the amount of snow collected in the gauge is melted and measured as rain ; this is indicated in the text and the amounts are then given in inches and cents.

Cold Weather Period, January and February.

I.—AFGHANISTAN.

Kabul.—Some falls of snow occurred in the early part of January, Kabul itself receiving 0'7" on the 2nd and 3rd ; snow remained on the ground till the end of the month. Very little snow fell in any part of the country from the middle of January up to the end of the period. The snowfall of the period was generally below normal. Passes which are usually closed were open throughout the winter.

II.—BALUCHISTAN.

Quetta.—Snow or sleet fell on 6 days in January and on 2 days in February at Quetta. The snowfall of the period over most of Baluchistan is reported to have been above normal.

III.—NORTH-WEST FRONTIER PROVINCE.

(*a*) *Hazara.*—Snow is reported to have fallen on 12 days in January and 15 days in February. Falls were below normal in January and above normal in February. The snowline is said to have descended to 4,400 feet in January and further down to 3,000 feet in February. The accumulations were generally below the average at the end of January and above the average in February. The following table gives the approximate total depths of falls in each month and the depths of accumulations at the end of each month.

Locality.	JANUARY.		FEBRUARY.	
	Falls.	Accumulations.	Falls.	Accumulations.
	Ft.	Ft.	Ft.	Ft.
Narang . . .	9½	4¾	21	15
Pludran . . .	8	3	17	14
Kagan	6	1	12	9½
Jared	1½	..	1	..
Malakandi . . .	1¼	¼	2	2
Sundigali . . .	4	1	4½	3½
Jachha	3½	½	4	2½
Thandiani . . .	5	2½	10½	8½
Dungagali . . .	3	2	8½	10
Birangali . . .	1½	½	¾	..

(*b*) *Dir, Swat and Chitral.*—No information was received.

(*c*) *Khyber Agency.*—Snow fell on the peaks of Adina, Gurdama and Malaka to a depth of 1½ ft. and 2 ft. in January and February respectively. Tirah experienced heavy snowfalls during the period.

(*d*) *Kohat.*—Fort Lockhart had 1⅓ ft. and 1¼ ft. of snowfall during January and February respectively.

IV.—KASHMIR.

(*a*) *Skardu.*—Snow fell at the station and on the surrounding hills on 4 days in January and 6 days in February. The snowline descended to 7,500 ft. each time. The falls of the period were below the average. Depths of estimated accumulations on higher peaks and passes were about 6 feet at the end of January and 10 feet about the end of February.

(*b*) *Dras.*—Snow is reported to have fallen at Dras on several days in January and February. Snowfall of the season was above normal. The accumulations on the Zojila and Mushkoo passes are estimated at 8 ft. and 18 ft. at the end of January and February respectively.

(*c*) *Srinagar.*—Several light to moderate and some heavy falls of snow occurred on the surrounding mountains and in the main valley during the season. The falls were below normal in January and above normal in February. The accumulations on the surrounding mountains were normal at the end of January and slightly above it by the end of February.

(*d*) *Kargil.*—Snow fell at the station on 8 days in January and 5 days in February. Falls for the season were above normal. Accumulations on the peaks and passes were estimated at 6½ feet at the end of January and 18 feet at the end of February.

(*e*) *Sonamarg.*—Heavy snowfalls were observed during the first 12 days of January and in the last week of February. Snowfalls were above the average in both the months. Accumulations of snow on the Zojila pass were about 7 ft.

National Oceanic and Atmospheric Administration

Environmental Data Rescue Program

ERRATA NOTICE

One or more conditions of the original document may affect the quality of the image, such as:

Discolored pages
Faded or light ink
Binding intrudes into the text

This document has been imaged through the NOAA Environmental Data Rescue Program. To view the original document, please contact the NOAA Central Library in Silver Spring, MD at (301) 713-2607 x124 or www.reference@nodc.noaa.gov.

Information Manufacturing Corporation
Imaging Subcontractor
Rocket Center, West Virginia
September 14, 1999

at the end of January and about 15 feet at the end of February.

V.—Punjab.

(*a*) *Rawalpindi.*—Snow fell on 4 days in January and 5 days in February on the peaks in the neighbourhood of Murree. The snowline descended to about 5,500 ft. Falls were below the average.

(*b*) *Kulu* (*Kangra District*).—In the Kangra district there were no falls of snow during the season except on the high ranges of the Himalayas. Accumulations of snow on the higher ranges were normal. In the Kulu sub-division falls were confined to elevations above 5,000 ft. in January and above 4,000 ft. in February.

(*c*) *Simla.*—Snow fell on 11 days in January and on 9 days in February. Falls were below the average in both the months. The snowline descended to 6,000 ft. in January and to 5,000 ft. in February. All well known high passes were closed for traffic during the period. Depths of accumulations in the various passes were estimated to be 6 ft. at the end of January and 9 feet at the end of February.

VI.—United Provinces.

(*a*) *Almora.*—The following table gives the falls of snow for the two months:—

Locality.	Falls.	
	January.	February.
	Ft.	Ft.
Chaudans	¾	1
Malla Johar	1	¾
Malla Darma	3	2

The falls were below the average in both the months.

(*b*) *Garhwal.*—Snowfall in the higher valleys of the district amounted to about 1 ft. in January and about 1½ ft. in February.

VII.—Assam.

(*a*) *Kamrup.*—No snow fell during the period. All passes were open to traffic.

(*b*) *Sadiya Frontier Tract.*—A very heavy fall occurred at Tidding in February; the snowline descended to 5,000 ft.

Hot Weather Period, March to May.

I.—Afghanistan.

Kabul.—In the first week of March there was snowfall all over the country, Kabul registering 0′3″ of snow. In the second week of April snow is reported to have fallen on the Bamar and Shibar passes. Generally snowfall was less than usual. Accumulations on the mountains were also less than usual. Snow had disappeared on the Paghman range, except for occasional pockets, before the end of May which is an earlier date than usual; but the Hindu Kush was well covered with snow until the end of May.

II.—Baluchistan.

Quetta.—Very light falls occurred on 4 days in the first half of March. The snow on the peaks of mountains around Quetta almost disappeared by the middle of March.

III.—North-West Frontier Province.

(*a*) *Hazara.*—Snow fell on 10 days in March on the surrounding hills above 4,500 ft. and was above the average. Accumulations at the end of the season are reported to have been between 1¾ ft. and 7½ ft. at heights of 10,000 ft. to 17,000 ft.

The following table gives the amounts of falls recorded in the month of March:—

Locality.	Falls.
	Ft.
Narang	12½
Pludran	11
Kagan	9¼
Jared	4½
Malakandi	2¼
Sundigali	3
Jachha	2½
Thandiani	5
Dungagali	5
Birangali	¼

(*b*) *Dir, Swat and Chitral.*—Snow fell on the high ranges of Chitral during May. Accumulations on the well known passes of the country at the end of the period were above normal. At Drosh no snow fell in May.

Malakand reported no snowfall in any place below 12,000 ft. Accumulations at the end of the period were below normal and were quickly melting away.

(*c*) *Khyber.*—Tirah experienced heavy snowfall in March and light snowfall in April. No snow fell in May.

(*d*) *Kurram.*—Accumulations on high peaks were normal at the end of May and were rapidly disappearing.

(*e*) *Kohat.*—Fort Lockhart reported 1′ 5″ snow in March. No snow fell in April and May.

(*f*) *South Waziristan.*—No reports were received for March and April. No snow fell in May. Accumulations had melted away by the end of the season.

(*g*) *Dera Ismail Khan.*—Snowfall on the Suleiman range was reported to be normal; accumulations of snow melted away early in May, as usual.

IV.—Kashmir.

(*a*) *Skardu.*—Snow fell on seven days in March and four days in each of the months April and May. The snowline was reported to have descended to 7,500 ft. in March and ascended to 9,000 ft. in April and to 10,000 ft. in May. Snowfall was said to be about average in March and April, and below it in May. The accumulation of snow on well known peaks and passes was estimated at 14 ft. at the end of March, 10 ft. at the end of April and 4 ft. at the end of May.

(*b*) *Dras.*—Snowstorms occurred on 8 days in March and 2 days in April. The amounts were above normal in both the months. No snow fell in May. Accumulations on the Mushkoo and Zojila passes were 30 ft. at the end of March,

20 ft. at the end of April and 12 ft. at the end of May, and were above normal.

(*c*) *Srinagar.*—Moderate to heavy falls of snow were received in the valley and on the surrounding mountains in March. The snowfall at the beginning of March was very heavy and caused great hardship to people and damage to property. Several light to moderate falls of snow also occurred on the surrounding mountains in April and a few light falls in May. The falls were much above the average in March, about the average in April, and below the average in May. Depths of accumulations on the surrounding mountains were more than 5 ft. at the end of March and were normal at the end of the season.

(*d*) *Kargil.*—Snow fell on 9 days in March and one day in April. No snow fell in May. The falls were above normal in March. The accumulations of snow on the neighbouring passes at the end of the various months were 24, 13 and 12 ft. respectively and were above the average.

(*e*) *Sonamarg.*—At the station several heavy falls occurred in March, and a few light falls in April, while no snow fell in May. The falls on the surrounding hills are reported to have been above the average. The accumulations of snow on the Zojila pass were estimated at 14 ft. at the end of March and at 13 ft. at the end of May.

(*f*) *Gurez.*—No information was received for March and April. No snow fell in May.

(*g*) *Leh.*—No reports were received for March and April. Accumulations at the end of May were less than the average. All passes were open to traffic.

V.—Punjab.

(*a*) *Rawalpindi.*—Light to moderate snow fell on 7 days in March on the higher peaks in the districts, and in places as low as 5,500 ft. on some occasions. The falls were below the average and snow had melted away before the end of April.

(*b*) *Kulu* (*Kangra District*).—Falls of snow occurred at elevations above 6,000 ft. in March and above 7,000 ft. in April. The accumulations at the end of the season at the Rohtang and Hamta passes were 3 ft. and 5 ft. respectively and were below normal.

(*c*) *Chamba.*—No reports were received for March and April. Snow fell once on the 19th May on altitudes above 12,000 ft. The accumulation of snow on well known peaks and passes was 15 ft. at the end of the period and was below the average.

(*d*) *Kilba* (*Simla District*).—Snow fell on 15 days in March. The snowline descended to an elevation of 8,000 ft. The well known peaks and passes received about 10 ft. of snow. Light snow fell in April on elevation above 9,000 ft. No snow fell in May except on very high peaks. Falls were below the average throughout the period.

VI.—United Provinces.

(*a*) *Almora.*—The following table gives the amount of falls for each month.

Locality.	Falls.		
	March.	April.	May.
	Ft.	Ft.	Ft.
Malla Johar	1	½	1½
Chaudans	9	6	4
Byans	..	8	4

The falls were generally below the average.

(*b*) *Garhwal.*—No reports were received for March and April. Snow fell twice to a depth of half a foot on elevations above 9,000 ft. during May, but soon melted away. Accumulations on the well known peaks and passes were about 5 ft. deep and were below normal.

VII.—Assam.

Baliapara Frontier Tract.—Snow fell to a depth of 1 ft. on the 8th and 9th April above the height of 11,000 ft. Snow on the Se-La pass was less than usual. The accumulation of snow on the Se-La pass at the end of March was about 2 ft.

South-West Monsoon Period, June to September.

JUNE AND JULY.

I.—Afghanistan.

Kabul.—There were no heavy falls of snow in the locality or in the adjacent regions during the season. Snow accumulations at higher levels were less than normal.

II.—North-West Frontier Province.

(*a*) *Hazara.*—The total amount of snowfall during these two months was estimated at 0′3″ to 0′10″ at heights ranging from 10,000 to 17,000 ft. The accumulations at these heights at the end of July ranged from 2 to 8 ft.

(*b*) *Dir, Swat and Chitral.*—No snow fell at Chitral, Drosh and Malakand during the period. The accumulation of snow at the end of the season was normal at Drosh; very little snow remained even on the high peaks of Malakand.

(*c*) *Khyber Agency.*—No snow fell in Tirah during the season. Snow existed as usual at the end of the season on the tops of the Gurdama, Adina and Malaka peaks.

(*d*) *Kurram.*—No snow fell in Parachinar and the adjacent region during the season. The accumulations of snow on the peaks of the Safed Koh were reported to be normal.

(*e*) *Waziristan.*—No report was received from North Waziristan. There was no snowfall in South Waziristan. Snow accumulations on the tops of the mountains melted away by the end of the season.

III.—Kashmir.

(*a*) *Skardu.*—There were three falls of snow in June and one in July. The snowline was reported to have descended to 11,000 ft. during the season. The accumulations

of snow on the surrounding peaks and passes at the end of June were estimated to be 2½ ft. deep. By the end of the season all snow had melted away.

(*b*) *Dras.*—There were two falls of snow in June. The mountain peaks and passes were reported to be covered with a thin layer of snow at the end of the season.

(*c*) *Srinagar.*—No snow fell either on the surrounding mountains or in the main valley during the season. The accumulations of snow at the end of the season, in particular on the Pir Panjal range, were greater than usual.

(*d*) *Gulmarg.*—Three light to moderate falls of snow were observed on the Afarwat mountain in June and one light fall in July. Snow accumulations existed on the top, and in the gorges of the Afarwat and the Handibal mountains and were reported to be greater than usual.

(*e*) *Kargil.*—No snow fell in June. Accumulations about 4 ft. deep existed in passes at the end of June, but had disappeared by the end of July.

(*f*) *Sonamarg.*—No snow fell during the season. Accumulations of snow 4 ft. deep were observed on the Zojila and Dachi passes.

(*g*) *Gurez.*—No snow fell in either months. Snow on the tops of the surrounding mountains melted away by the end of the season.

(*h*) *Leh.*—Snowfall during the season was scanty. Accumulations were to be found only above 17,000 ft.

IV.—Punjab.

(*a*) *Chamba.*—There were three falls of snow in June and one in July. The accumulations of snow were visible only on altitudes above 12,000 ft. and were reported to be rather below normal.

(*b*) *Kulu* (*Kangra District*).—There was no snowfall in the district during the season. Accumulations on the ranges and passes at the end of the period were normal.

(*c*) *Kilba* (*Simla District*).—Occasional light falls of snow were observed on the highest peaks of all the surrounding mountains in June. The falls were below normal. The snowline descended in either month to about 13,000 ft. Accumulations at the end of the month were below the average. Fresh falls of snow at heights above 14,000 ft. were witnessed in July. Snow accumulations on the tops of the mountains melted away by the end of the season.

V.—United Provinces.

(*a*) *Almora.*—The snowfall at the principal localities, namely, Byans, Chaudans, Malla Danpur, Malla Johar and Malla Darma appears to have been fairly heavy according to the reports of the patwaris. The accumulations at the passes were reported to be deeper than usual at the end of July.

(*b*) *Garhwal.*—Snow fell to a depth of two to three ft. on heights above 12,000 ft. during the season. Accumulation of snow at a height of 15,000 ft. was 1½ ft. deep towards the end of the period.

AUGUST AND SEPTEMBER.

I.—Afghanistan.

No reports were received.

II.—North-West Frontier Province.

No reports were received.

III.—Kashmir.

(*a*) *Skardu.*—Five light falls of snow were reported during the period, one in August and four in September. The falls were confined to elevations above 10,000 ft. and were normal.

(*b*) *Dras.*—Light snow fell on the surrounding peaks on one day in August and on three days in September. The falls were above normal in the former and below normal in the latter month. The accumulation of snow on the Zojila and Mushkoo passes was about 0′3″ at the end of the season.

(*c*) *Srinagar.*—Light snowfall occurred on three occasions in September on the neighbouring mountains, and was below normal.

(*d*) *Gulmarg.*—There were four light to moderate falls of snow in September on the Handibal and Afarwat ranges. Snowfall of the season was above the average.

(*e*) *Kargil.*—Two falls of snow occurred on the high peaks in September.

IV.—Punjab.

Kilba (*Simla District*).—Occasional falls were witnessed on the higher peaks in the latter part of September, the snowline descending to the level of 13,000 ft. The falls were below the average. There was very little snow left on the passes at the end of the season and hence they were all open to traffic.

V.—United Provinces.

Almora.—The following table gives the estimated total amount of falls for each month :—

	August.	September.
	Ft.	Ft.
Chaudans	7	9
Malla Johar	3	3
Malla Danpur	..	8

The total snowfall for the season was above the average. The accumulations of snow were deeper than usual at the end of either month.

The Retreating Monsoon Period, October to December.

I.—Afghanistan.

Kabul.—The first snowfall of the season, which was slight, was observed on the Paghman hills on the 26th November. This was followed by three slight falls during the first week of December. Between the 11th and 14th December snow fell continuously at Kabul to a depth of 0′6″ and to a depth of a few feet on all the surrounding hills. The falls were considerably above normal.

Accumulations of snow on the peaks at a height of 7,000 ft. were reported to be about 3 ft. deep.

II.—Baluchistan.

Quetta.—Light snowfalls were observed on the high peaks early in December. Accumulations on the high peaks were reported to be a little more than half a foot about the middle of the month.

III.—North-West Frontier Province.

(*a*) *Hazara.*—No report was received for October and November; presumably the winter snowfall began only in early December. The following table gives the estimated depth of falls during December and the accumulations at the end of the month :—

Locality.	Falls.	Accumulations.
	Ft.	Ft.
Narang	7	3½
Pludran	6	3
Kagan	5	2
Jared	1	..
Malakandi	1	⅛
Sundigali	3	¾
Thandiani	5	1
Dungagali	5	4
Birangali	3	..

The falls of the season were reported to be normal.

(*b*) *Dir, Swat and Chitral.*—At Drosh two falls were observed in November and three in December. The falls were confined to the high peaks.

(*c*) *Kurram.*—Snow fell at Parachinar and on the surrounding hills on the 24th December. The accumulations at the end of the season on the peaks of the Safed Koh were below normal.

(*d*) *Kohat.*—Fort Lockhart received 0′ 7″ of snowfall in December.

(*e*) *Waziristan.*—No report was received from North Waziristan. In South Waziristan snow fell in December somewhat earlier than usual; it was reported that snow was lying thick on peaks above 8,000 ft. towards the close of the month.

IV.—Kashmir

(*a*) *Skardu.*—Snow fell on all the surrounding mountains on two days in each of the months October and November, and on 11 days in December. The snowline descended as the season advanced and reached 7,500 ft. in December. The depths of snow at the end of the period were estimated to be about 0′4″ at a height of 8,000 ft., and about 5 feet on the high peaks.

(*b*) *Dras.*—Three falls of snow were observed in each of the months October and November, and six falls in December. The falls were below the average. On the Zojila and Mushkoo passes the accumulations at the end of the season were estimated to be about 7 ft.

(*c*) *Srinagar.*—Several light to moderate falls of snow occurred on the surrounding mountains during all months of the period. Light falls were witnessed in the main valley after the middle of December. The falls were above normal in December. Accumulations at the end of the period were however normal.

(*d*) *Gulmarg.*—Information was received only in respect of the first half of October, when it was reported that no snowfall was noticed on the Afarwat range.

(*e*) *Kargil.*—Very light snowfall is reported during October. Snow fell on three days in November and on eight days in December. Accumulations at the end of the period on the high peaks were estimated to be 2 ft. deep. Both the falls and accumulations of the season were below normal.

(*f*) *Leh.*—Fairly large accumulations of snow were visible on the high peaks at the end of December and the passes to the north were closed.

(*g*) *Sonamarg.*—There was slight snowfall in November. In December there were very frequent falls, the accumulations on high peaks at the end of the month being about 7 ft.

V.—Punjab.

(*a*) *Kulu* (*Kangra District*).—No snow fell in October and November, 3 or 4 falls occurred in the first half of December on the higher peaks. The snowfall of the season was above normal. The depths of the accumulations were estimated to be about 9 ft. on the Hampta pass and about 3 ft. on the Bashleo and Jalori passes, which were open to traffic.

(*b*) *Chamba.*—Snow fell on seven days in December, the total amount was about 3′9″. The accumulations at elevations of 15,000 to 16,000 ft. were about 3 ft. deep at the end of the month. The snowfall of the season was normal, but the accumulations were below normal.

(*c*) *Kilba* (*Simla District*).—There were three heavy falls of snow on elevations above 12,500 ft. in October and one fairly good fall on elevations above 12,000 ft. in November. There were 15 falls in December and nine of these at places as low as 6,000 ft. in altitude. The falls were below the average in October and November, and above it in December. At the end of December the Rupan and Bruan passes were closed to traffic. The depth of

accumulations of snow on these passes was reported to have been 12 ft.

VI.—United Provinces.

(*a*) *Almora.*—The total depths of falls in each of the months October to December are given below :—

Locality.	October.	November.	December.
	Ft.	Ft.	Ft.
Malla Darma . . .	9	3	9
Malla Danpur . . .	..	9	11
Chaudans	6	2	8
Malla Johar . . .	..	1	6
Byans	..	..	8

Snowfall was generally below normal in October and November and above it in December. The accumulations at the passes appear to have been about normal.

(*b*) *Garhwal.*—Snow fell in December only and on nine days, but mostly at high altitudes ; the total amount was about 4′6″.

VII.—Assam.

(*a*) *Kamrup.*—There was no snowfall on the Tasigong route while there was a little snowfall on the Poonakha route in the months October to December. The snowfall for the season was slightly above the average.

(*b*) *Sadiya Frontier Tract.*—The first fall of the season was observed on the Minyong Abor Hills on the 7th November and was followed by two other heavy falls during the period. There was also intermittent snowfall above a height of 9,000 ft. in the Mishmi Hills. The falls were above normal in the Abor Hills and below it in the Mishmi Hills. The accumulations at the end of the season were slightly below the average.

Summary.

Cold Weather period, January and February.—Falls and accumulations were generally above the average in Baluchistan, the North-West Frontier Province, Kashmir and the Punjab hills. In the United Provinces, however, *viz.*, in the vicinity of the Kumaon hills—, and in Assam, they were below average.

Hot Weather period, March to May.—Falls were generally above the average throughout the western Himalayas in March. Accumulations at the end of May were slightly below normal.

Southwest monsoon period, June and July.—There were a few isolated falls of snow on peaks above a height of 11,000 ft. The accumulations, however, were slightly below the average.

Southwest monsoon period, August and September.—Snowfall was above normal in the United Provinces and below it in Kashmir and the Punjab. Elsewhere there was hardly any snow. The accumulations at the end of the period were generally below normal, except in the United Provinces where they were above the average.

Retreating monsoon period, October to December.—In the western Himalayas snowfall was in defect in October and November, and in moderate excess in December. Accumulations at the end of December were generally above average except in Assam where they were slightly below normal.

S. R. Savur,
Meteorologist, Poona.

MGIPC—M—VIII-3-9—24-8-37—290.